Structural study of lithium strontium borophosphate crystal using x-ray diffraction and infrared spectroscopy

Abstract :

In order to study the influence of deionized water and heat treatment on the structure of the crystal, a compositional series of 20Li $_2$O:20SrO: 30B $_2$O $_3$:30P $_2$O $_5$ with deionized water and without de-ionized water as a solvent were prepared at 800°C for different sintering time from 7 to 24 h. The crystalline phase and structural of 20Li $_2$O:20SrO:30B $_2$O $_3$:A 30P2O5 crystal was studied using X-ray powder diffraction (XRD) and Infrared (IR) Spectroscopy. From the XRD result, samples prepared with deionized water as solvent displayed better crystalline respond. The samples showed a better crystalline structure when it was sintered for 24 h as compared to 7 h. The infrared spectra of the samples showed three distinctive regions around 1200 - 650 cm $^{-1}$, 650 - 360 cm $^{-1}$ and 360 cm $^{-1}$ showing clear signs of boron units as the major host structure.